Recent Explorations in the Heart of Asia.

SOME NEW BOOKS.

The record of one of the most remarkable of the explorations accomplished in our time will be found set forth in the two volumes comdeing the work entitled Through Asia, by BYEN HEDIN (Harpers). This is a popular narrative of the journeys performed by the author through some of the most inaccessible parts of timer Asia during the years 1893 to 1897. It is written for the general public, and present scarcely anything more than a description of his travels and of his more memorable experiences. The great bulk of the scientific observations made finds no place in the present lumes, although the geographer will be able to discover in them many interesting data. author contents himself with a bare the scientific labors upon which the chief part of his time, energy and attention was expended, to drawing of geological sections of the meridional border ranges on the east side of the Pamirs, and of the mountain chains of the Kwen-lun system; the collecting of anthrometrical measurements from a number of Kirghiz; an inquiry into the periodical migrations of the nomads; a study of the etymology of the geographical nomenclatures; the measement of the volume of every river crossed; bathymetrical soundings in the lakes, and the oumulation of botanical specimens, more especially of algae from the lofty Alpine regions of the Pamirs and Tibet. Special heed was also given to the taking of meteorological observations regularly three times a day. Another important task was the collection of voluminous materials dealing with the geo-graphical character and extent of the Desert of Gobi, as also with the complicated river system of the Tarim, which our explorer as enabled to study at many different points all the way from the Pamirs and the highland dons of Tibet down to the termination of the stream in the far distant lake of Lop-Nor. Mr. Hedin further noted the periodical fluctuations in the volumes of the Central Asiatic rivers; how, during the summer, they swell to flood-like dimensions and then, in many cases, windle away during the winter to paltry rivulets or even dry up altogether, and how these fluctuations occur with unvarying regularity, representing, so to speak, the ebb and flow that accompany the heart beats of the mighty continent.

As soon as Mr. Hedin had passed beyond the

fairly well-known regions of the Russian

Pamirs, he took up, in the summer of 1894, the strictly topographical division of his labors, and, with diopter, plane table and calculation of paces, meas ued the environs of the lake Little Kara-kul; he next mapped the glaciers of that king of the Central Asiatic mountain giants, Mus-tagh-ata. After that he surveyed every route he travelled over during the years 1894-95-96 and the early part of 1897. Never for a single day were these surveying labors remitted. Throughout the whole of the long red line which marks his travels through Asia, there is not a single break up to the day, March 2, 1807, when he rode in at the gate of Pekin and recorded his last entry on the 552d sheet of his field book, or surveying journal. As a rule, our explorer laid down his maps on the scale 1:95,000. Across the level of the expanses, however, he worked to the scale 1:200,000; and, in mountainous regions, where the road wound through defiles, where numerous side valleys joined the main valley, and where the morphological character of the surface underwent frequent and varying changes, he used the minor scale of 1:50,000. The aggre gate distance of the route mapped by him in this way amounted to 6,520 English miles that is to say, nearly four and a half times the distance from London to Constantinople, two and a half times the distance from New York to San Francisco, and one a half times the distance from Cairo to Cape Town; in other words, more than a quarter of the earth's circumference. If to this be added more than eight thousand miles which he travelled by carriage or rail in the better known portions of the Asiatic continent, we get, for the entire extent of his travels, a grand total of 14,600 miles, or more than the distance from the North Pole to the South Pole. The rate of travel of his caravans, calculated from the results of the whole of the journey, averaged a little over 2% miles an hour. We should here note that out of the above-mentioned 6,520 miles no fewer than 2,020 were through regions which no European had ever before visited. Over certain portions of the re maining 4.500 miles one traveller had preceded him; over other portions, two travellers; but, in no case, more than three. Despite the fact that, in certain sections of his explorations, he had one or more predecessors. his observations, even there, may tay claim to a certain degree of originality; for, being able to speak Jagatai Turki with fluency, he was were known as Taghliks, or mountaineers. dependent of the involuntary errors and wilful deceits of interpreters, and, consequently, was in a position to gather a good deal of information of a more or less useful character. which will be new to most readers. For one thing, he was able to record a vast number of geographical names, none of which had appeared on any map, European or Asiatic.

In order that we may appreciate fully the value of the discoveries made by Mr. Hedin, it. may be well to recall briefly the work previ ously accomplished in his field of exploration It is certain that there are several parts of the earth still remaining in which even the pioneer has as yet scarcely entered upon the task of investigation. This is particularly the case with the interior of Asia, which has been long neglected. Immense areas in the almost inaccessible Desert of Gobi and nearly endless wastes in the highlands of Tibet are to this day as little known, as are, the polar regions. It was with the view of contributing some what to our knowledge of the geog-raphy of Central Asia that Mr. Hedin set out upon the journey which this book describes. He had prepared himself for it by years of work and study, and, more over, in 1890-91, he had made a reconnoissance into Russian Turkestan and Kashgar, in order to examine the suitability of those territories as bases of operations for exploring unknown countries. After his return from Kash gar his chief concern was to procure the necessary means for carrying out his under-To that end he addressed to his Majesty King Oscar of Sweden and of Norway a memorandum setting forth the particulars of his plan. The principal features of the projset, together with some of the historical notes appended, deserve to be here reproduced, in order that we may the better comprehend the task which the explorer set himself.

In the heart of Asia, between the two highes chains of mountains on the earth, the Kwen lun and the Himalayas, is to be found the most stupendous upheaval of an extensive plateau to be found on the face of the planet, to wit: the Tibetan Highlands. The average height of this plateau is 13,000 feet, but in the north it attains as much as 15,000 feet. Its aggregate area, therefore, of 770,000 square miles, or two and a half times that of the Scandinavian Peninsula, may be described as on a level with the highest peaks of the Alps. According to the Chinese maps, whereof our author speaks with much respect, its northern parts, which constitute one of the least known tracts of Asia. appear to consist of a system of uninhabited lake basins possessing no outflow Further south the Tibetan and Mongol nomads lead a wandering shepherd life, and it is in the extreme south of the region that there is any settled population. What we call Tibet lies aside from the great highways used by travellers in the nineteenth century. Only few of the more adventurous Europeans have done something towards collecting the scanty materials upon which our present knowledge of the country is based. Its desolate scenery, its lofty, inaccessible mountains, and its extreme remoteness, situated as it is in the core of a wast continent, have deterred explorers and driven them to find scope for their activity in other parts of the worldin the polar regions, among the Oceanic Islands, or where the coast has provided a fixed point of departure to unknown regions lying

scarcely any part of the world in which the exrer is so richly rewarded for his pains, or finds such an inexhaustible field for observations of every kind as in Tibet, the country whence the light of holiness streams forth on the world of Lamaism, just as its waters, in the form of mighty rivers, stream forth to give life and nourishment to the countries which surround them. Many important prot lems in physical geography still await their solution in Tibet and in the Desert of Gobi, each of which, when solved, will be a distinct gain to science. In a strictly geographical sense, Tibet is one of the least known regions in the world. Even the maps of Africa cannot now show a blank patch of such vast extent as occurs under the name of Tibet on our maps of Central Asia. In this respect the polar regions alone are comparable with Tibet. The itineraries furnished by the Roman Catholic missionaries at a period when the country was more easily accessible than it is at the present time cannot be followed on the map with absolute certainty, and, from a geographical viewpoint, are often of little value

Nevertheless, even this country, jealously closed as it is by Buddhistic fanaticism, has been compelled to open its doors, if not its sanctuaries, to the persistency of European inquiry. The western and eastern borders, at all events, have been traversed by English, Russian and French travellers. In recent times the only explorers who have gained entrance to Lassa have been a few Indian pundits trained by British officers. The jealous apprehension of the Chinese Government, the religious fanat leism of the Tibetans and the wild nature of their country, these are the factors which have kept Tibet in isolation longer than any other country in Asia. At a time when the influence of neither Russia nor England was so great as it is now, more than one European succeeded in crossing Tibet, and even in reaching the capital. The first European to enter Lasan was a monk. Odorico di Pordenone, who travelled from China to Tibe in the first half of the fourteenth century. In 1624 the Spanish Jesuit, Antonius de Andrade went from India to Tibet and, in 1661, the two Jesuit missionaries, Grueber and D'Orville, made a remarkable journey from Pekin to Lassa by way of Koko-nor, Tsaidam, and the country of the Tanguts. They remained in the Tibetan capital for two months, and then returned by way of Nepal to Agra, and thence to Europe. In the eighteenth century the mysterious city was visited by several propagandists. Desideri lived in Lassa from 1716 to 1729, and Della Penna from 1719 to 1735, and, again, from 1740 to 1746; they, however, left no writings, except a few letters. Between the years 1729 and 1737 the bold Dutchman, Van der Putte, travelled from India by way of Lassa and Koko-nor to Pekin, whence returned through Farther India to Lassa. On his return home he burned all his papers, under the impression that nobody would be-lieve his wonderful narrative. In 1811 Manning reached Lassa, and in 1845 the two French missionaries, Huc and Gabet, made their celeorated journey from Pekin, by way of Kokonor, Burkhan-buddha and Tan-la, to the capital of Tibet, a journey which Father Hue described in an interesting book. Since then no European has succeeded in penetrating to Lassa. Every subsequent European expedition which started with that city as its goal has been compelled to turn back, its mission unaccom-

The outlying parts of Tibet, nevertheless have been visited in recent years by several European travellers, not all of whom, however, have done scientific work or brought home valunble information. The extreme west of Tibet was explored in 1856 and 1857 by the brother Schlagintweit, in 1865 by Johnson, in 1868-70 by Shaw, in 1868-70 by Hayward, and in 1870 and in 1873-74 by Forsyth and his many associates, in 1885-87 by Cary and Dalgleish, and in 1888-90 by Grombtehevsky. Kischen Singh. an Indian pundit, who was a member of Forsyth's expedition, succeeded in penetrating somewhat further into the country than the others. One of the most remarkable journeys ever made in Tibet was that of the pundit Nein Singh, who had taken part in Schlag intweit's and Forsyth's expeditions, and was sent by Capt Protter in July 1874, from Leh in Ladak to Lassa. His caravan consisted of wenty-six sheep carrying light loads. Only four of them survived the journey, which extended to a thousand miles, and lasted four months. The animals subsisted on such herbge as they were able to find on the way. At the town of Niagzu, on the boundary between Ladak and Tibet, they met with both forest and pasture. The tract east of Lake Panggong proved to be uninhabited, except by few shepherds and their flocks. The natives called themselves Changpas, or Northmen but to the inhabitants of Turkestan they The Tibetan plateau stretched away east for 800 miles to the sources of the Chinese rivers and the Burkhanbuddha Mountains. As far as eye could reach, it appeared to consist of grass-grown plateau, diversified by hills and valleys, with snowclad peaks in the distance Occasionally a shepherd-tent would be seen, and intelopes, wild asses and wild sheep abounded. The results of Nain Singh's journey were 276 eterminations of latitude, the mapping of 1,200 miles of unknown country, observations for altitude with the boiling-point thermometer and a series of meteorological observations

Before our author's explorations it was coneeded that, among those who had travelled in Eastern Tibet, the Russian General Prievalsky ranked first. On Nov. 17, 1870, he started from Kiakhta with three Russian followers and passed through the Desert of Gohi by way of Urga and Kaigan to Pekin. After a trip to Dalai-nor he left Kalgan in May, 1871, and travelled west through the mountain chains of In-shan and Muni-ula, then up the Yellor River (Hoang-ho) until he reached the country of Ala-shan and its capital, Dynyuan-in. He afterward returned to Kalgan Then, after a good rest, he went back to Dyn-yuan-in, where we find him in June, 1872. Here began the most remarkable part of his travels, the country which he next traversed being little known. He first explored the high lands of Kan-su, a well-wooded mountain region lying east of Koko-nor; then, having made the circuit of the lake and crossed the southern range of Koko-nor, the expedition reached the great swamps of Tsaidan, whence it ascended into the higher regions of Tibet, the home of the wild yak. Several of the mountain chains of the Tibetan highlands were crossed on the way to the Yang-tse-kinng, which was reached on Jan. 10, 1873. Although it was Prievalsky's intention to penetrate as far as Lhasa, which he did, in fact, approach within twenty seven days' journey, he was constrained to abandon the plan, owing to his caravan animals becoming exhausted and his provisions running short. Prjevalsky's journey termi-nated at Irkutsk in Siberia, at which place he arrived on Oct. 8, 1873. For three years the expedition had struggled against difficulties which seemed almost insurmountable; had de-fied the summer heat of the Mongol desert and the winter cold of the Tibetan highlands: had spent months in a small, frail tent, often at temperature of 40° below zero of Fahrenheit, iving on game killed by members of the expedition. The energy and endurance which Prievalsky showed are pronounced by our author, who certainly is qualified to judge, worthy of all admiration. It is evident that he was swayed by a clear standing of the great importance of his under taking. Although surrounded by a hostile population and exposed to every kind of danger, he disregarded reasonable fears, and, amid the pestilential smoke from the argal (dry dung) fire in his tent, went on working out his memoranda, and sorting his col lections. It was a geographical achievement which rightly placed Prievalsky's name in the forefront of Asiatic exploration. Our author thinks that the most wonderful thing

to travel inexpensively in Asia if you know how Prievalsky's second i journey lasted from

about this expedition, which covered 7,350

miles, is that it cost very little more than 6,000 roubles (say \$3,000), a proof that it is possible

within comparatively easy reach. Yet there is | August, 1876, to July, 1877. Although it extended to less than 2,850 miles, the cost was pore than 19,000 roubles, or about \$9,500 This time, however, his equipment was more complete and his escort more numerous. The results of this second journey, also, were of extreme importance. The region which he added to the domain of geographical knowledge had been one of the least known in Cen-tral Asia. Previously our sole conceptions of its nature had been derived from hearsay, from Chinese maps and from tradition. seeded from Kuija through the Ili Valley to Yulguz, afterward south by way Korla and along the lower Tarim to Lopnor and the Altyn-tagh. When Prievalsky saw that it was impossible to reach Tibet, and, particularly. Lassa, the goal of his desire, by way of Lop-nor and the desolate regions south of the Altyn-tagh, he determined to try what he could do by way of Gutshen and Khami; but he was taken ill on the road, and was constrained to return to Russia. The crowning feature of this expedition was the discovery of the new Lop-nor, and the great chain of mountains, Altyn-jagh, which has so greatly altered the appearance of the maps of Central Asia. He also discovered the existence of the wild camel, a discovery afterward confirmed by other travellers, viz., Carey, Younghusbane

The third expedition conducted by Prievalsky lasted from March, 1879, to November, 1880, and covered some 4,750 miles. On this ecasion he was accompanied by twelve natives and had a sum of 23,500 roubles, or \$11,750, at his disposal. He chose Salsansk on the Russian frontier as a point of departure, and travelled by way of Bulun-tokhoy and the Urungu River through Zungaria to Barkuf, and thence over the Tlan-shang Mountains to Khami. After that he crossed the Desert o Gobi, touching his former route at a couple of points. This time he penetrated much further o the south, namely, across the Yang-tsekiang, and the Tam-la Mountains as far as 32° north latitude. Prjevalsky's fourth and last journey began in October, 1883, and ended in the same month two years later. With twenty followers, most of them Cossacks, he accomplished the distance of 4,850 miles, the cost of the expedition being 42,250 roubles, or \$21,125. From Kinkuta he crossed the Gohi Desert by the same route he had taken on a previous oc easion, and went on further through the highlands of Kan-su, as far as the two lakes of Tsaring-nor and Oring-nor, the twin sources of the Hoang-ho. This was the culminating point of the fourth journey. After a deviation to the Yang-tee-kiang he continued on to Tsidan, ce over the Altyn-tagh to Lop-nor and Khetan at the northern foot of the Kwen-lun Mountains, and, finally, down the Khotandaris and over the Tian-shan Mountains.

The extensive journeys in 1878-82 of the intrepid Indian pundit Krishna, commonly called A-K, were of the greatest importance to the geography of Northern Tibet. In the spring of 1878, he was ordered by the Calcutta Government to explore the territory bordered on the north by Prievalsky's journey, on the east by the routes of the French missionaries. Desgodins and Durand, and of the Englishman Gill, on the south by the Sang-po (Brahmaputra River) and the Himalayas, and on the vest by the meridian which runs through Lhasa and Lop-nor. In more recent years region had been crossed only Hue and Gabet and by Bonvalot and Prince Henry of Orleans. Disguised as a merchant and provided with plenty of money and nstruments, A-K went by way of Sikkim to Lassa, reaching that city in September, 1878. There he stopped for a whole year, waiting to find a large and well-armed caravan with which he might travel northward, as the Tangut robbers make the roads in that direction very unsafe. On Sept. 17, 1879, a Mongol caravan arrived. A hundred of its members, Mon gols, with a few Tibetans, were going back at once. All were mounted, and all armed with spears, swords and firearms. A-K seized the opportunity. Great caution was observed during the march, patrols being sent on ahead, and watch kept at night. The route which was folowed at first coincided with that of Nain Singh in 1875, when he journeyed from Tengri-no to Lassa. South of Tan-la, A-K touched the oute taken by Prjevalsky on his third journey The highest pass in the Tan-la, 16,400 feet narked the watershed between the uppe Mekong and the Yang-tse-kinng. After trav lling five months on the plateau he reache the Anghirtakshia Mountains over a pass 15. 750 feet in altitude. A halt was made at Tenghelik, in Tsaidam, but just as the caravan was on the point of starting again it was attacked by 200 robbers, who relieved A-K of all his goods and baggage animals. He managed, however, to retain his notes and instruments and in spite of his reverses determined to persevere with the solution of the problems which had been placed before him. He wintered on the western shore of the Kurlyk-nor until March, 1880. Thence he intended to steer his course toward Lop-nor; but his Indian servant deserted him, carrying off most of his possessions. He himself was obliged to take service with a Mongol, who was going to Sa-chow. There he was well treated by a Lama, but was compelled by the Chinese Governor to turn back. This turning point is of importance. It was from that region that Prievalsky made his journey toward Tsaidam and Tan-la in 1879-80, and in the same quarter Count Szechenyi's expedition through China came to an end. With one faithful folower, A-K started on his return journey, but was again compelled to take service with Chinese Tartars." Finally, however, he reached Darchendo in safety and at the mison station there received help from the

and Darjaling to India.
In 1888-80, an American, Mr. Rockhill, made a journey into Eastern Tibet. Starting from Pekin with only one follower and a few horses, he proceeded to the Koko-nor and Alak-nor. crossed the Yang-tse-klang, and eventually got ack to Shanghai. He could speak Chinese and Tibetan, and travelled in disguise. It is recognized by Mr. Hedin that Mr. Rockhill did some first-rate mapping, measured heights, and made notes. Mr. Rockhill found that previous European maps were incorrect and un-reliable in respect of both orography and hydrography. Several other travellers, impelled by the desire for research or by ambition, have of late undertaken journeys into inner Tibe and toward Lassa. The most successful expedition was that of Bonvalot and Prince Henry of Orleans, which crossed Asia from northwest to southeast. They fol-lowed Prievalsky's route along the Tarim as far as Lop-nor and the Altyn-tagh. On Nov. 17, 1889, they set out from Lop-nor, and, on the 23d, crossed the Altyn-tagh, leaving Prievalsky's and Carey's routes behind them. They then struck a direct course to the south across unknown country, and without guides. This march lasted till Feb. 11, 1890, and extended to two days' journey south of the Tengri-nor. The Tibetan plateau on which, for three months, they travelled was observed to fall nowhere below the altitude of 13,000 feet. Some of the mountain chains of the Ewen lun system were crossed by passes more than 18,000 feet in altitude, and numerous lakes were discovered. The country was barren in the extreme, totally devoid of trees or bushes; it did not even provide sufficient provender for the camels and horses of the caravan, which, in consequence of the fatigue, the privation, and the severe cold, gradually died off, until very few were left. From Dec. 4 to Jan. 30 not a human being was encountered. Two days' journey south of the Tengri-nor the expedition was stopped by the Tibetans, and, in spite of negotiations lasting nearly seven weeks, it failed to obtain permission to continue it narch to Lassa. The travellers were therefore obliged to make a considerable circuit, and eached Tongking in September. In May, 1800, the Bussian Captain, Gron

Bishop, and thence returned by way of Vatana

chevsky, endeavored to penetrate into Western Tibet from Polu, but, being unsuccessful, h urned aside to Khotan, and spent July and August in exploring the Planav Valley, the upper Yarkand-daria and the watershed be-

tween these two rivers. After a visit to the Pamirs, he proceeded by way of Kashgar to Tashkend, where Mr. Hedin met him at the end of the same year. He had covered a distance of more than 4,700 miles, and his researches form a connecting link between those of Kuropatkin (1877), Forsyth (1873-74), Prievalsky (1885), and Pievtsoff (1889-90). He met the last named in Niya, where the two travellers were able to compare notes and their determination of places. In 1889 and 1800, Gen. Pievtsoff, accompanied by Prievalsky's companions, Roverovsky and Kozloff, and by the geologist Bogvanovitch, made a journey into Eastern Turkestan, crossing, the Tian-shan Mountains, proceeding up the Yar-kand-daria to Yarkand, thence to Khotan, and wintered at Niya. From the northern foot of the Kwen-lun Mountains they made several expeditions on the Tibetan plateau, and 'explored, in partfcular, that part of it which lay to the north of the Arka-tagh. The return journey was by way of Lop-nor, Karashahr and Dzungaria. Pievtsoff's journey is pro-nounced by Mr. Hedin one of the most important of those that have been undertaken in these parts, no other traveller having made such reliable determinations of place. We should next observe that, in the Altyn-tagh and the tracts south of them, Prievalsky's route in his fourth journey was crossed at several points by that of the Englishman Carey. Accompanied by Daigleish, who was afterward murdered. Carey crossed the Altyntagh, the Chamen-tagh, and the uninhabited plateau between these two ranges of moun-tains before he was able to reach the Kwen-lun proper and the Tibetan highlands. He passed over these chains at a point rather more to the west than that chosen by Prjevalsky, and afterward intersected Prievalsky's route on the plateau between the Chamen-tagh and the Kwen-lun mountains. Carey subsequently proseeded to the east along the foot of the Kwen-lun, went a short distance between this range and the Koko-shill, and crossed the pilgrim road from Mongolia to Lassa, immediately south of the point where it climbs over a pass in the Kwen-lun Mountains. At the river Ma-chu he turned northward and traversed portion of A-K's routs. This journey took clace in 1885-87. We note finally that Capt Younghusband, whose name is well known for nis travels in the Pamirs, travelled in 188 from Pekin via Barkul, Ak-su and Kashgar to India, and Capt. Bower, between June, 1891, and March, 1892, crossed Tibet and China from Leh to Shanghai.

Such had been the record of exploration in Central Asia when Mr. Sven Hedin's expedition started in 1893. Among the great problems that still waited solution in the interior of Asia, enumerated in a preliminary letter to the King of Sweden, were the discovery of new chains of mountains, lakes, and rivers of the traces of an ancient civilization and of antiquities which might throw light on the great migrations of races through Asia; the identifleation of old, disused caravan roads, and ultimately, the mapping of an entirely unknown region. In the same memorial it was pointed out that in the Asiatic highlands the geologist had unique opportunities of study-ing phenomena of the greatest possible interest, interesting not only on account of the processes of evolution which the mountain chains are actually undergoing there, but also for the reason that those mountain chains are o little known. The table land of Tibet rises like an enormous platform above the low lands of Hindustan on the one side and the desert of the Tarim Basin on the other, the latter being one of the lowest depressions in the interior of any continent. Lake Lop-nor has an absolute altitude of not more than 2,500 feet, and at Luk-tchin, south of Turfan, a depression has distance below the level of the sea. While the lder geographers and discoverers bestowed their attention upon little else save the topographical appearance, or, at most

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surface elevations of a country modern geographical science claims from its surveyors trustworthy knowledge of the origies of the present condition of the sur face of the earth and the genetic connection origin, age and relation of the mountain chains to each other. Another problem of in tense interest was the Lop-nor question, raised by Baron von Richthofen, who insisted that the water of the basin into which the Tarim empties, must be saline, inasmuch the Tarim contains a greater quantity salt than almost any other large river in the world. Prievalsky, however had reported that the last basin or reservoir of the Tarim was a fresh water lake. Mr. Hedin onjectured that the explanation would probably be found to be that, in addition to the fresh water lake visited by Prievalsky, there is another large lake which is saline, and into which

Instead of making one continuous journey as he had originally intended, Mr. Hedin found it expedient to undertake several expeditions from a common starting point. Thus, after crossing the Pamirs, in the winter and spring of 1894, he employed the summer and autumn for a new journey into the east and middle Pamirs, Kashgar being his point of departures In the spring and summer of 1895 he traversed the Takla-makan desert and the north of east Turkestan; and, finally, in the summer and au tumn of the same year he made a third excursion into the southern Pamirs. In the sam way, he subsequently made Khotan a base of operations, leaving that place in the begin ning of 1806 for a long journey around east Turkestan to Lop-nor. It was only when he quitted Khotan in the end of June, 1896, that he really burned his boats behind him, cutting of all connection with the west until he reached Pekin. The substitution of separate excursions for a single continuous journey involved, of course, some loss, of time, but the results were larger, and, after each expedition. thanks to the Russian post, the explorer was able to send home his collections from Kash gar or Khotan. We may here mention that the cost of the four years' travel, including that of nstruments and equipment, amounted to rather less than \$9,500.

Among the many remarkable discoveries and observations chronicled in these capacious vol-umes we have selected for special reference the account of a long-buried city in the Takla makan Desert, the western prolongation of the and waste of Gobi. None of the other ruing which Mr. Hedin visited in eastern Turkestan resemble in the least these curious remains As a rule, the survivals of ancient towns in that region consist of walls and towers of sun-dried or, at least, burned clay. In the sand-swamped city, which itself bears the name of Takla makan, all the houses were built of wood (poplar); not a single trace of a stone or clay house was discernible. They were also constructed in quite a different way. Although the ground plan in many respect resembled that of the modern houses, most of the dwellings were built in the shape of a small square or oblong within a larger one, and divided into several small rooms. The only por tions that survive are posts, 6 to 10 feet high and pointed at the top, worn away by wind and sand, cracked and hard, but as brittle as glass, breaking readily when struck. We are told that excavating in dry sand is desperate work; as fast as you dig out the sand it runs in again and fills up the holes. Each sand dune must be completely removed before it will entirely up the secrets that lie hidden beneath it, and that is a task beyond human power. Nevertheless, Mr. Hedin succeeded in making a sufficient number of discoveries to obtain a general idea of the character of the ancient city. Even in the section excavated there were hundreds of ruined houses. But he was unable to make out the ground plan of the city, nor could he trace the streets, bazaars and squares, because the whole of the site which occupies an extensive area from two to two and a half miles in diameter, was buried under high sand dunes. In one of the buildings, which the workmen called the Temple of uddha, the walls are extant to the height of about three feet. They consisted of kamish (reed) stalks, tightly bound together in small, hard bundles and fastened to stakes, and were plastered with a coating of clay mixed with chaff,

forming a tough, solid and durable building

material. The walls, which were quite thin, were plastered outside as well as inside, and were decorated with a number of paintings, executed in a masterly manner. They represented female figures, somewhat airily clad, kneeling with their hands folded as in prayer. Their hair was twisted in a black knot on th top of the head, and the eyebrows were traced in a continuous line, with a mark above the root of the nose, after the fashion customary among the Hindoos of the present day. Mr. Hedin also tound pictures of men with black beards and mustaches, in whom the Arran type was clearly distinguishable at the first glance; they were dressed in the same manner as the northern Persians. Besides these there were figures of dogs and horses, and boats rocking on the waves, a strangely impressive picture in the heart of the arid desert; there were also ornaments and running borders of ovals, each inclosing the figure of a seated woman, with a rosary in herhands; above all; there were lotus flowers in profusion. To have carried away the wall just as it was was out of the que The wall itself will last well enough, but the plaster and the paintings peeled off at the least touch. Mr. Hedin, accordingly, copied the lat ter, taking the dimensions, and noting down the colors. In digging on the outside of a wall he discovered a piece of paper written in what to him were undecipherable characters, although many of them were quite well preserved. Near the same spot be discovered a life-sized human foot, modelled in gypsum. Like the paintings, it was executed unusual refinement of taste, and had plainly belonged to an image of Buddha. The supposition of the native workmen that the edifice is an old Buddhist temple is pronounced not improbable. In another building subse quently unearthed were found a number of gypum figures in relief, each from four to eigh inches high, and flat at the back, showing that they had served as wall decorations. represented images of Buddha seated against background of lotus leaves or a wreath

of flames; women standing with one hand outstretched and the other laid over the breast, dressed in long, voluminous manties, with hanging sleeves and open at the neck, so as to show a network. The faces were nearly round, and the hair was gathered up in a knot on the top of the head. The ears were very long, with hanging lobes, as in Buddhist images at the present day. The eyes were almond-shaped and oblique, and at the back of the head was a ring resembling a halo. Other figures represented women with bare breasts holding a bow-shaped garland over their heads, In some of the other houses were made different discoveries. For example, Mr. Hedin lighted upon a long piece of carved wooden cornice upon a silkworm chrysalis, upon the axle of a wheel which appeared to have belonged to a spinning wheel, upon fragments of handles of earthenware pitchers, upon a well-preserved wooden screw and upon a porphyry millstone more than six feet in diameter, which was of course at one time driven by running water. We should mention, further, that among the sand dunes, which possess a certain power of conserving organic matter, there were still traces of gardens. Truncated stems of the ordinary poplars still stood in rows, marking the direction of ancient avenues. Nor were

indications wanting that here apricot and plum trees had formerly lived and thrived. It is evident, then, that the walls of this Godsecursed city, this second Sodom in the desert, had been washed in ancient times by a power ful river, the present Kerlya-daria, and that its houses and temples were watered by numerous artificial canals. Close to the city, and along the banks of the great waterways, luxuriant woods tossed their quivering leaves in the preeze, as they still do beside the present bed of the Keriya-daria, and, in the hot summer days, the leafy apricot trees gave cool shade to the inhabitants. These streams were powerful enough to make millstones revolve. Silk was cultivated and horticulture and the industries flourished. The people who dwelt there manifestly knew how to decorate their homes with good taste and a sense of artistic fitness.

At what period was this mysterious city in-habited? When did its last crop of russet apricots ripen in the sun? When did the sour green leaves of its poplars yellow for their last fall? When was the trickling hum of its millwheels silenced forever? When did its despairing people finally abandon their awelling to the ravenous maw of the desert king? Who were the people that dwelt there? What was the tongue they spoke? Whence came the unknown inhabitants of this Tadmor in the Mongolian wilderness? How long did their city flourish, and whither did its people go when they saw that within its walls they ould no longer have a safe abiding place? These are questions which Mr. Hedin does not attempt to answer definitely now, but they will be considered in the volumes which hereafter will set forth, in more or less technical language, the scientific results of his expedition. We may say, however, that, from the rate of drift of the sand dunes to the southwest our explorer calculates that the city of Takinmakan was interred about fifteen hundred years ago. He is also prepared to assert that the inhabitants of the town were Buddhists, and of Aryan race. The buried city is undoubtedly older than the Arab invasion led by Kuteybeh Ibn Muslim in the beginning of the eighth century. It is also certain that such highly developed artistic training as is evinced the pictures here described was never at tainable among the Turki races that now inhabit eastern Turkestan. Those pictures must have been painted by Aryans, that is to say, by insmen of the Greeks.

In the Forbidden Land.

In a book published by the Harpers and entitled In the Forbidden Land we have an account of a journey by A. HENRY SAVAGE LANDOR into Tibet, of his capture, imprisonment and tor-ture, and of his ultimate release. This journey of which the two volumes before us contain a record was undertaken by the author during the spring, summer and autumn of 1897. It is fliustrated partly from photographs and partly from sketches made on the spot. Only as regards the scenes of torture has Mr. Landor been compelled to draw from memory, but it will be acknowledged that the impression left by them must have been sufficiently vivid. Notwithstanding the excruciating sufferings which brought the author's travels to an untimely close, it cannot be said that his expedition failed to secure important geographical results. Among these may be specified the so ution of the uncertainty regarding the division of the Mansarowar and Rukastal lakes; the scent to so great an altitude as 22,000 feet and the procurement of pictures of some of the great Himalayan glaciers; the fixing of the po-sition of the two principal sources of the Brahmaputra River and the fact that, with only two companions, the author was able to traverse, for long period, the most populated part of Tibet. A political consequence of the journey should also be set down; owing to the publicity which Mr. Landor gave in the Daily Mail to the outrageous Tibetan abuses taking place on British soil, the Government of India has this year (1898) notified the Tibetan authorities that, in future, they will not be permitted to collect land revenues from British subjects.

Mr. Landor had intended to proceed to Tibet by way of Russian and Chinese Turkestan, but the vessel which contained his supplies having stranded just before reaching her port of destination, he decided to abandon his original plan and sail for Indis. He ultimately found himself at Naini Tal, a hill station in the Lower Himalayas and the summer seat of the Government of the Northwest Provinces, whence he wrote to the Lieutenant-Governor signifying his intention to proceed to Tibet. Not the slightest objection seems to have been raised by any Anglo-Indian official to his intended journey into the land of the Lamas. It was through the Lumpya Lek that Mr. Landor and his attendants entered Tibet. He kept away from the road and paths, passing over several ranges of high mountains, and camping at very high altitudes for nearly three weeks. When he started he had thirty men with him. Twenty-one of them left him five days after crossing the Tibetan

boundary. At Mansarowar Lake five followers, who were Shokas, declined to go any further Mr. Landor paid them what was due to them. and they left. It was they who gave the information of his intention to go to Lassa. Our explorer had proceeded but three marches toward the Mayum La pass, when his only two remaining Shokas deserted during the night. They carried off all the stock of provisions for his Hindoo servants, together with his ropes and straps. His party had now dwin-dled down to Chanden Sing, a bearer, and Man Sing, a coolie. The latter was ill, and it was feared that he was developing leprosy. His feet were in a very sore and cut condition. Hence he could scarcely get along. Mr. Landor and his two attendants went over the Mayum La pass and followed the course of the Bruh-maputra River for many troublesome marches, until they reached the Neo Taambo (river), in grossing which one of his yaks sank and its tried hard by diving was lost Our explorer tried hard by diving was smalling in war cold find the co ness of the water. The load conthined all his remaining provisions, some clothes and all his shoes, 800 rupees, his lantern, some ammunition, and sundry knives and razors. This misfortune drove him to Toxem, which place his party reached in a state of starvation. It had taken them several days to get there Owing to the weak, fatigued and starved condition of his two followers, Mr. Landor had to seek to procure for them food and horses, as it was impossible for them to go forward on foot. He would not desert them, though he might have done so, as he was personally prepared to push on, despite the many difficulties which he had to encounter hourly. The place called Toxem consisted, we are told, of one mud house and an encampment of about eighty tents. The shepherds re-ceived the party kindly, and consented to sell them horses and provisions, dir. Landor encamped for the night about two miles beyond the settlement. During the Mr. Landor encamped for the night about two miles beyond the settlement. During the evening several persons visited the encampment, bringing gifts of provisions. The explorer invariably gave them money in return, certainly three or four times more than the value of the articles presented. During the night he was disturbed several times, and went out into the darkness, but failed to discover any one. This, however, had been his nightly experience; hence he had grown to attach little moment to such noises.

In the morning of Aug. 20, 1897, two or three Tibetans came, offering to sell him provisions and ponies. While he and his two servants were examining and selecting ponies he noticed that numbers of villagers came up one by one, spinning wool or car-

provisions and ponies. While he and his two servants were examining and selecting ponies he noticed that numbers of villagers came up one by one, spinning wool or carrying bars of meal, while others arrived with more ponies. Then his servants, overjoyed at the hope of getting mounts, rode first one pony and then another to suit themselves. Chanden Sing, having selected one, called his master to look at it and try it. Mr. Landor walked to the spot, which was about a hundred yards from his tent. Naturally he was unarmed. The demeanor of the people had been so friendly that it had given him no cause to suspect that any treachery was anticipated. While he stood with his hands behind his back, enjoying the delight of his long-suffering servants, he was suddenly seized from behind by several persons. He was grasped simultaneously by the neck, arms, wrists and legs, and was thrown down in a prope position. He fought and struggled and managed to shake off some of his cantors so that he was able to regain his feet; but others rushed up, and he was quickly surrounded and overpowered by twenty-five or thirty persons. Hopes were thrown around his neck legs, and body, and, thus entangled, he was thrown three several additional times to the ground. He fought with his head, teeth, legs, arms, and succeeded in regaining his legs four times. His assaliants overcame him at last, however, by strangling him with a rope which they had thrown around his neck. Then they bound him hand, foot, and neck. When he had an opportunity to look around he saw his bearer, Chanden Sing, struggling against some fifteen or twenty foes. He was quickly entangled, thrown, and secured by ropes. Even Man Sing, the weak and jaded coolle, was attacked by four stout, powerful men, though he was not able to offer any resistance. He, too, was bound. While the party was struggling against their treacherous enemies some fifteen or twenty foes. He was quickly entangled, thrown, and secured by ropes. Even Man Sing, the weak and jaded coolle, was attacked by fou

In the afternoon of the same day, a Pombo, or man in authority, with several high lamas and military officers, held a court under gaudy tent. Mr. Landor saw Chanden Singled orward to this tribunal, while he himself was placed in the rear of the mud house, to preclude his witnessing the scene about to take place. He heard, however, Chanden Sing Interr in a loud, angry tone, and accused of having been the Englishman's guide. Next, he heard Chanden Sing's moans and groans. Then a company of soldiers led Mr. Landor beand, as he would not do so, they tried to sompel him to do it by forcing him on his knees. He succeeded, nevertheless, in maintaining a standing posture. Looking around him, he beheld his servant, Chanden Sing, lying on the ground stripped from the waist downward, in the midst of a number of Lamas and soldiers. He saw two stalwart Lamas, one on each side of him, castigating

him with knotted leather thongs. They were belaboring him with vigorous arms from his wast to his feet. He was bleeding. As Mr. Landor could not be compelled to kneel, he was allowed to sit down before the Pombo's officer. Then his notebooks and printed maps were produced, and he was interrogated, first, as to the route he was interrogated, first, as to the route he had daken, then as to the route he had daken, then as to the route he had daken, then as deteches, and he was interrogated, first, as to the route he had daken, then as deteches he had daken he could, partly through his interrogated he was a state of the could partly through an interrogated he was and knew a little Hindustani. Mr. and partly through an interrogated his day the maps and sketches; that he had been brought on the was a servant, and that the Englishman alone was responsible for the route taken by the party and for the maps that had been made; that he, consequently, if anybody, should be punished. Thereupon one of the Lamas struck Mr. Landor a hard blow on the head with the butt end of his riding drop, but, nevertheless, continued to castigate his servant, Chanden Sing. The Englishman was then led away captive, but coulinued to hear the moans of his unfortunate follower. He was taken to a tent and there kept during the greater part of the night, with his arms instened behind his back and his legs tied. Sleep or rest was impossible. The tent was swarming with vermin, which quickly covered him, and it appears that he suffered unspears that he suffered unspears that he suffered unspears that he suffered unspears had not be the him, and it appears that he suffered unspears will me food. He was kept a prisoner throughout the following day (Aug. 21) until 4 P. M. Then a soldier entered the tent and informed him that he was to be florged that his legs were to be broken and his eyes jurned out and that he was dide refer the tent and informed him that he was to be beased. Mr. Landor merely laughed, for he could not but thim that he was the prison

to death by the cohort behind him. While thus riding furiously, with his arms extended he knard. Mr. Landor had the flesh rubbed off the hand and shuckles, so much so that the bronk had and shuckles, so much so that the bronk the bronk the ged to get him soft, while them at the broth turged to get him soft, while them at the broth turged to get him soft, while them at the broth turged to get him soft, while them at the broth turged to get him soft, while them and the broth the latter into foreible contact with the spikes in the crupper and womand him the spikes in the crupper and the spikes in the crupper and the spikes him to do the latter of a large while tonit throating him forward, said that, as he was about to be beheaded, it was needless. He was about to be beheaded, it was needless. He was about to be beheaded, it was needless. He was about to the left front of a large while tonit him to the spikes of the latter of the spikes him to with the spikes of a prism further him the spikes of a prism further him the spikes of a prism further will be spiked to the left front of a large while tonit him the spikes of a prism further him the spikes him the s

Notwithstanding the tortures which Mr. Landor suffered, he obtained a surprising amount of information. We would direct particular attention to the forty-seventh chapter, treating of the Lamasaries, or Buddhist monasteries, and to the sixty-fourth and sixty-fifth chapters, which discuss the appearance and position of women in Tibet. We are told that in each nonastery are to be found Lamas, or priests, Chaves, or novices, and a lower grade of ignorant and depraved dependents, who are, so to speak, slaves of the higher orders. Availing themselves of the absolute ignorance in which they succeed in keeping the people, the Lamas practice, to a great extent, occult arts, by which they profess to cure illnesses, discover murders and thefts. stop rivers from flowing and bring storms about at a moment's notice. It is pror sertain that the Lamas are adepts at hypnotic experiments, by which means they contrive to let the subjects under their influence see many things that do not really exist. Mesmer-ism plays an important part, also, in their weird dances, during which extraordinary con-

weird dances, during when extraordinary constance received, the body of the dancer being syentunes assumed, the body of the dancer being syentunes are made to read a length of the received when they enter a Lamsaary, but they do not always keep these vows, and they are, moreover, addicted to the most disgusting of all vices in its very worst forms, which accounts for the repulsive appearance of far-gone depravity so common among the middle-aged priests. In Tibet, as in other Buddlest countries, there are numerices as of the most part, and looked down up the property of the most part, and looked down up the property of the most part, and looked down up the result that the number of the numerics strict seclusion is enforced, but to most of them the priests are allowed free access, with the result that the numb become the concubines of the Lamas. Even apart from this, the women of the numerics are quite as immoral as their brethern of the Lamasries, type of humanity.

It was not Mr. Landor's luck to see a single good-looking woman in Tibet, although he naturally saw some that were less ugit than others. At her best the Tibetan woman, with the accumulated filth that from birth is undisturbed by soap, scrubbing, or bathing; with nose, cheeks, and forehead smeared with black dintuent, to prevent the akin cracking in the manufaction and the second second